Build 19.4.02 (current)
- Support for custom panels. Use F8 to toggle between onscreen instruments and panel view. Initial implementation for Deltaglider. Panels can be scaled and scrolled. Multiple panels per vessel are supported.
- The Delta glider now comes with a completely new mesh, generously provided by Roger "Frying Tiger" Long. It contains moving parts for landing gear, nose cone docking and airlocks.
- Preliminary API interface for custom MFD modes. An ascent profile recorder is provided in orbitersdk\samples\CustomMFD as an example.
- Mouse interface for panels implemented. Among other things, MFDs can now fully be operated via the mouse (in panel mode).
- Switched key event handler for buffered keys from Windows message loop to DirectX. This may have an effect on key mapping on some keyboards.
- Implemented additional navcomp modes: "Turn prograde" (key: "["), "Turn retrograde" (key: "]"), "Turn orbit-normal" (key: ";") and "Turn orbit-antinormal" (key: "'")
- Fixed bug which caused Orbiter to run out of file handles.
- Fixed bug which caused initial velocity offset in vessels created by modules.
- Fixed bug which caused invalid initial orbital elements in moons defined w.r.t. the equatorial frame of the parent planet.
- More API functions. The API reference manual now contains 80+ pages!
- Earth surface texture now uses the "Blue Marble" map from the NASA Visible Earth project.
- Orbiter now supports rendering of emissive city light textures on planet night sides. City light textures for Earth are included.
- Support for reflective ocean surfaces. Included for Earth.
- F3 now allows to switch to any vessel anytime.
- Reference objects for Orbit and Docking HUD can now be manually selected with Ctrl-M.
- Atlantis module: SRB thrust at separation adjusted to 5% max. SRBs now fall behind immediately after separation.
- Numerous minor bug fixes.

Build 14.1.02
- Bugfix: ShuttleA and ShuttlePB can lift off again with hover thrusters.
- ShuttlePB now implemented as module.
- Bugfix in Atlantis module which caused crashes during liftoff.
- Bugfix in SDK which resulted in inconsistent state vectors.
- Additional SDK functions, including retrieval of orbital elements.

Build 22.12.01
- Fixed a bug which prevented the Deltaglider from taking off.
- The flight model realism can now be selected via the "Complex flight model" box in the Parameters tab. As a result, the original and MK2 versions of the Deltaglider have been merged.
- The manual is now provided in PDF format (Doc\Orbiter.pdf), so it can be viewed with Acrobat Reader and does not require MS Word.

Build 21.12.01
- This version features Orbiter's first "realistic" spacecraft type: Space Shuttle Atlantis, based on Javier Fernandez' superb model. This is also a reference example for the extended API interface. Features include:
  - Realistic behaviour of solid rocket boosters (SRB). SRBs fire as soon as the main engines reach full thrust, and can not be turned off once ignited. SRBs separate 126 seconds after ignition.
  - Main tank can be jettisoned.
  - Mesh animation: Payload bay doors and landing gear can be operated.
- Fixed bug causing crashes when turning off object shadows.
- Extensive additional API functions, including a vessel interface.
- The extended flight model is now default for the DeltaGlider, the Glider Mk2 class has been removed.
- Improved and debugged the shipedit utility in the orbitersdk\tools directory.
- The full source code for the Atlantis module is included in the SDK. This should provide a good starting point for the development of complex customised spacecraft.
- Preliminary implementation of runway touchdown for Atlantis.

- Added specular reflection effects (e.g. shiny solar panels). Can be enabled from the launchpad.

Build 10.9.01
- Improved planetary positions. Orbiter now uses VSOP87 perturbation terms for Mercury to Neptune. VSOP87 code is encapsulated in a separate module with public interface, so can be replaced by the user.
- Improved lunar position using perturbation terms. Accuracy is now sufficient to recreate eclipses.
- Adjusted Earth's siderial day by ~1sec to 23h 56m 4.09s. Sunrise and sunset times should now be fairly accurate.
- New integration scheme improves stability at 1000x time acceleration.
- Orbiter now supports programming interface (preliminary version). Added an SDK (software development kit) package which includes headers and libraries for addon development.
- Planetary texture tool (pltex) has been moved into the SDK package.
- Support for cloud layers added: Earth clouds are now rendered as a separate layer down to ground level.
- Atmospheric "horizon glow" support added.
- Modified Sun texture.
- More eye-candy: Nicer engine exhaust flare.
- Saturn moons added: Mimas, Enceladus, Tethys, Dione, Rhea, Titan
- ISS mesh improved (plus new docking port)
- Added Mir station.
- Added Transfer orbit MFD mode.
- Orbit MFD now supports open (e >= 1) orbits.
- Fixed bug in Orbit MFD which caused crashes when selecting planets as targets.
- Fixed teleport bug when selecting new docking target while docked.
- Fixed bug which kept main engine going when out of fuel.
- Fixed bug which caused jumps in vessel position.
- Fixed bug causing crashes in Orbit sync MFD.
- Target selectable in Docking MFD (Shift-T)
- Added MFD parameter menu support (Shift-`)
- Mesh format has changed slightly – modellers and mesh converter developers should check out the format in the '3DModel' SDK document.
- "Derailed trains" bug fixed.

Build 6.7.01
- "Launchpad" startup dialog for improved parameter selection. Includes video mode, joystick parameters, simulation parameters and scenario load.
- Modified configuration interface: Spacecraft parameters now in scenario file, instead of individual .cfg files. Spacecraft references in Solsys.cfg no longer required.
- Online help via Launchpad (preliminary).
- Pause function (Ctrl-P) implemented, optionally with movable external camera.
- New flight model (experimental, currently only used by GliderMk2 class): Modified atmospheric flight characteristics, modified rotation mode.
- Improved Map MFD: moons and ships can now be selected as orbit targets (Shift-T); reference planet/moon is user-selectable (Shift-R); removed bug in display of orbital planes.
- Improved Orbit MFD: Selectable reference (Shift-R), extended target selection (Shift-T), indicator for G-field contribution of reference, auto-reference selection (Shift-A), removed bug when switching reference.
- Improved Docking MFD: works now for vessels which do not dock along the longitudinal axis.
- Improved Docking HUD: Negative velocity marker ('+'), and direction indicators for offscreen target and velocity markers.
- Improved Orbit HUD: Direction indicator for offscreen prograde marker.
- Docking to other stations than ISS is now possible.
- Improved eccentricity calculation fixes problems with launch from Mars.
- Added Jovian moons Io, Europa, Ganymede and Callisto.
- Attitude fine control (10% max) for keyboard implemented (Ctrl–Numpad key combinations). Linear forward/back attitude mode (Numpad-6/9) implemented.

- New vessel class: Balázs Patyi's nifty PTV single seater is now included in Orbiter, with some interior design by myself.
- Time deceleration key is now 'R' instead of 'Ctrl-T', by popular demand.

Build 3.5.01
- New instrumentation for rendezvous and docking manoeuvres with orbital stations: "Synchronise Orbit" (Shift-Y) to intercept the station, "Docking" (Shift-D) for final approach. Also new "Docking" HUD mode.
- Attitude thrusters can now be engaged in parallel pairs (translational mode). Switch between rotational and linear mode with Numpad "/" key. Mode indicator added to HUD.
- Corrected axis of rotation (obliquity and longitude of Sun's transit) for all planets.
- Added Mars moons Phobos and Deimos.
- Inner/outer radius of Uranus ring system corrected.
- Orbital elements for secondary bodies (moons and orbital stations) can now be specified with either the ecliptic or the parent body's equator as frame of reference (config file option 'ElReference').
- New external camera modes: target-relative, absolute direction and global frame. See manual for description. (F2 to toggle or Ctrl-F2 for menu – note that the menu for external view targets is now accessed via Ctrl-F1).
- Instrument modes can now be selected via a menu (Shift-F1).
- Instruments can be made opaque for better readability (MFDTransparent entry in Orbiter.cfg).
- Target object for Orbit MFD can now be selected with Shift-T.
- Selection lists rewritten and cleaned up.
- Extensive additions to the manual, including all new instruments and associated manoeuvres, and a detailed check list for a complete flight from launch to docking at the ISS.

Build 13.3.01
- New resolution level for planetary surfaces: 8192x4096 (!) This requires some serious 3D hardware (around 32MB texture memory and DXT1 texture compression support). Earth, Moon and Mars textures at this resolution level are provided as separate downloads. The standard ORBITER distribution contains textures up to 4096x2048.
- Re-organised planet texture resolutions. 8 levels are now supported: 64x64, 128x128, 256x256, 512x256, 1024x512, 2048x1024, 4096x2048 and 8192x4096. The following have been dropped: 512x512, 1024x1024 and 3072x1536.
- Included planetary texture tool (pltex) to allow users to generate their own texture maps from planet surface bitmaps.
- Added Uranus and Neptune.
- Saturn has new surface texture.
- Saturn and Uranus have rings now. Shadows are partly implemented (planets cast shadows on rings but not vice versa).
- Added generic mesh as surface base object type to allow inclusion of custom objects. Removed remaining inconsistences in surface base definition file format.
- Added section on planetary surface textures to the manual.

Build 13.2.01
- A star catalogue containing ~16000 bright stars is now included. The actual number of rendered background stars can be set in Orbiter.cfg via option "NumStar". Star brightness can be adjusted with option "StarBrightness".
- Display of constellations can be toggled with F9 ("planetarium mode").
- Orbital elements for ISS improved.
- First lunar surface base opened.
- New instrument "Align orbital plane" (Shift-A) included. This aids in the initial stages of rendezvous and transit maneuvers.
- Updates to the manual. Now contains a "Basic Flight Maneuvers" section to explain some of the fundamental navigation methods.

Build 9.1.01
- Limited fuel: Each spacecraft now contains a limited supply of fuel. The ship's mass decreases during flight as fuel is burnt. The "Mass" entry in the ship and class configuration files is now interpreted as "empty mass". Two new options have been added: FuelMass and Isp (fuel-specific impulse). Fuel level

is displayed on the HUD above thruster settings. The Orbiter.cfg now has an option "UnlimitedFuel" to ignore fuel consumption. A ship is automatically refuelled after touching down on a landing pad.

- Selectable ships: Whenever the user-controlled ship has safely touched down on a surface base landing pad, the user can jump into any ship currently parked at the same base by pressing F3. Try flying the glider to Cape Canaveral, hop into the little transporter, and return it to Habana.
- Blue sky: Background colour is adjusted to simulate light scattered in the atmosphere when the observer is located within a planetary atmosphere. Currently very simplistic (homogeneous, direction-independent)
- Additions to the Map Virtual Instrument (Shift-M): Projections of orbital planes of ship and selected orbital station are now plotted.

Build 20.12.00
- Major rewrite of the atmospheric flight model. The glider should now actually glide in the atmosphere. Still more work to be done for ground contact/takeoff scenarios.
- Delta glider now has trim control (Ctrl-Keypad2 and Ctrl-Keypad8) to manipulate flight characteristics in atmospheric flight. Added visual trim control display to HUD.
- Full support for dynamic surface object shadows.
- Modifications to surface base configuration files. Object lists are now better structured, making it easier to generate custom bases. See documentation for format.
- Turned off generic texture maps for Earth for the time being.
- Some joystick configuration options available via Orbiter.cfg.

Build 6.12.00
- Included Doc directory which had been left out in the first release.
- Added "H-level" (L) navigation computer mode which keeps the ship level w.r.t. the horizon. Also important for other high-level modes.
- Added "HoldAlt" (A) navigation computer mode which maintains current Altitude above ground by modulating hover thrusters.
- Improvements to the surface base visuals.
- Preliminary object shadows.
- Some modifications to configuration files.

Build 27.11.00
- First released version.